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East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

(FOUO 9/80)



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EAST EUROPE REPORT
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INTERNATIONAL AFFAIRS

LARGE-SCALE INDUSTRIAL ORGANIZATIONS IN CEMA COUNTRIES DISCUSSED

Prague ULOHA A POSTAVENI VYROBNICH HOSPODARSKYCH JEDNOTEK [THE ROLE AND STATUS OF ECONOMIC PRODUCTION UNITS] in Czech 1977 pp 12-38

[Book by Josef Bavlnka]

[Excerpt] Organizational Forms and Status of Supraenterprise Bodies in the Industry of the Socialist Countries

The steadily growing concentration of industrial production is without a doubt one of the more conspicuous features that has come to light thus far in the economic development of the European socialist countries. There has been a marked acceleration in the pace of this process, especially so during the last 15 years.

On an objective plane the growth of industrial concentration is being accompanied by commensurate integration processes which are unfolding in a planned manner among production units, usually at the same level of management, and which are culminating in the establishment of larger and more comprehensively integrated production units that are taking on the nature of formal integrated organizations.

With respect to the forms and processes of this tendency toward integration, all socialist countries have been focusing their attention--in conjunction with the effort to come up with more efficient methods for the centrally planned management of dynamic socialist economic growth--primarily on developing the institutional forms of supraenterprise bodies in response to objective imperatives. This means that they have had to concentrate on making improvements in the organizational structure of the industrial and technological infrastructure.

The guiding purpose behind these efforts was to establish those kinds of integration-oriented entities which would do the best possible job of laying the groundwork for the implementation of important economic reform measures aimed at strengthening the system of centrally planned management and at boosting the efficiency of industrial production. Basically, this approach necessitated the establishment of relatively large economic complex, adequately endowed with plant, equipment and capital, that bear full responsibility for the performance and advancement of the entire integration process and which were to be endowed with relatively substantial discretionary powers when it comes to making decisions on important production and management issues. In the course of setting up these kinds of integrated units, it was necessary to comply with certain specific conditions with respect to the product lines slated for integration, i.e., it was, above all, necessary to take

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into account the existing level of production concentration in the affected branches and sectors, the overall quality of their management, and the specific conditions of each individual country.

As a result of this selective approach there now exists a considerable diversity of integration forms (in terms of their organizational structures).

Table 1.*

<u>Country</u>	<u>Organizational forms of supraenterprise bodies</u>
Bulgaria	State economic associations State economic enterprises
Hungary	Enterprises (large-scale enterprises) Associations of enterprises Trusts Joint enterprises
GDR	Associations of: --enterprises --enterprises and combines --plants Combines --incorporated into associations --administered directly by government ministries
Poland	Associations of: --enterprises --enterprises and combines --plants Combines --incorporated into associations --administered directly by government ministries
Romania	Industrial centrals Combines Industrial groups Trusts
USSR	Production associations Scientific and technical production associations Combines Federal and republic industrial associations

*Sources:

Yevstignayev, R. N. "New Trends in Economic Management," EKONOMICKE VEDY V SOCIALISTICKYCH ZEMICH, Economics Institute of the Czechoslovak Academy of Sciences, No 10, 1972.

Shtundiuk, V. "Production Associations; Credit Management and Accounting," DYENGI I KREDIT, No 4, 1972.

Pavelka, F. "Financial Management and Material Incentives in the State Economic Organizations of the Bulgarian People's Republic; Current Trends and Prospects," FINANCE A UVER, No 2, 1976.

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The forms of integration cited in the above table are identified in accordance with the terminology which is used in the respective countries. In some cases, however, the stated term bears no relationship to the actual concept represented by a given form, or a designation is used which is fundamentally different from that used to describe the same kind of entity in other countries. This holds true above all in the case of the trusts in Hungary which are generally structured along the lines of the vertical principle of production organization and are, therefore, synonymous with combines; then there are the industrial centrals and industrial groups in Romania which are essentially identical to the form called an association in the other countries. Of course, it should be added that in Bulgaria--as the table shows--association is the standard term used to describe all types of supraenterprise bodies. This means that in Bulgaria the association represents a form of integration that is based both on the horizontal and vertical principles of industrial organization.

When we take these facts into account and consider them in light of the above table, we find that the actual diversity of integration forms a diversity which exists strictly as a function of the various labels [used to describe these forms], will be narrowed down considerably. Thus, all of the integration forms mentioned in the above table can be classified, on the basis of the substantive nature of their functions, i.e., on the basis of their actual conceptual framework, viewed from the standpoint of industrial organization, as belonging essentially to no more than two distinct categories. By the same token, both of these categories are present in all of the socialist countries under consideration here, as we have shown in the following tabular survey:

Table 2.

Categories of integration	Countries					
	Bulgaria	Hungary	GDR	Poland	Romania	USSR
Category I: (associations, industrial centrals, industrial groups and trusts in Romania)	/	/	/	/	/	/
Category II: (combines, trusts in Hungary and vertically organized associations in Bulgaria)	/	/	/	/	/	/

This categorization is more than just a taxonomic simplification, it also describes the two basic types of integration and is supplemented by the breakdown showing the distribution of these groupings in the countries under discussion.

By ascertaining which kinds of specific integration forms exist in each of these individual countries, we have answered one of the most basic questions confronting us. But in order to gain a broader understanding of this problem it is, of course, necessary to come up with a number of answers to other questions that will describe these integration forms in terms of their function under the particular conditions that exist in each of the countries under study.

In this connection, it is most important that we should take a look at the situation in each of these countries in order to:

--determine the role played by the central authorities in the formation of the integrated units and their actual configurations,

- define the objectives that inspired the formation of these entities,
- ascertain the basic principles and considerations that were taken into account in the formation of individual integration forms,
- determine the underlying nature of the organizational structure of production of a given integration form (organizational concepts, horizontal or vertical structuring and their production programs),
- ascertain the relative importance (quantitatively and qualitatively) of individual integration forms within the context of an entire industry,
- identify the basic functions of individual integration forms and possibly isolate any trends reflecting changes in the thrust of their activities,
- ascertain the asset endowment of the respective integration units from the standpoint of functional, industrial-technological and financial complexity,
- and identify the basic patterns of the internal and external relations of a given form; patterns which are indicative of the actual state of integration as the highest form of management in the enterprise-economic sphere (i.e., mainly in terms of the relations of the management of the integrated unit vis-a-vis the central authorities and its own integrated [subordinate] organizations as an expression of the centralization or decentralization of management; in essence, this is a question of defining the degree of integration of subordinate units within the context of a given integration form as one unit the extent to which they make use of the khozraschet [management practices]).

In most of these countries, the integration forms described above did not begin to emerge until the advent of the second phase of the economic reforms process, that is, starting roughly around the year 1968. For the most part, this second phase, which was a product of previous economic developments, was inaugurated by the spelling out of the categorial imperative calling for more consistent implementation of principles which had already been accepted in connection with the launching of the first phase of this process.¹ At the same time, a much more important role was assigned to the qualitative indicators of economic performance. In this sense, the improvement of the economic efficiency of the countries concerned should be linked much closer to harnessing the intensive management resources and methods to production than has been the case until now. This objective was to be achieved primarily by the broadest possible participation of the working people in management with the more efficient application of the principles of democratic centralism and with the implementation of new and effective wage incentive systems which would motivate the workers to boost their productivity. Both of these methods were to be employed on a basis of effective organic interlocking.

In improving the management system along these lines, the individual countries took it for granted that the techniques of industrial management could not be regarded as being immutable, that they should be compatible with the prevailing level of economic development, and be employed in such a way as to make best use of the experience and knowledge gained from past forms of management. As a reflection of this correct proposition, and in contrast to the past practice of imposing

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a uniform organizational structure on all integrated units, an effort also got under way in the area of the organization of the industrial and technological infrastructure to promote the view which holds that compliance with the criterion of optimal industrial efficiency, a criterion which must be accorded the highest priority in connection with the planned management of integration processes, calls for, in addition to associations, certain other and, under certain conditions, more effective kinds of integration forms.

This requirement was a product of the critical examination of past trends pertaining to the status and role of the association in the management systems of the countries concerned. During the first phase of their economic development these countries failed, for the most part, to achieve the original goal of organizing the association as a uniform, large-scale industrial-commercial complex with a view to gradually transforming it into a comprehensive management system in the industrial area of the economy. The realization of this goal was based on the assumption that the association would function as a self-contained khozraschet unit. But it was difficult to realize this assumption under conditions where each affiliated enterprise was recognized as an independent khozraschet unit. In actual practice, the associations, which in the majority of cases were amalgamations of enterprises (rather than plants), typically amounted to nothing more than "groupings" of enterprises operating under a khozraschet system. The level of actual industrial integration achieved within the framework of these associations was, therefore, minimal and this proved to be the case even in those situations where conditions were conducive to higher levels of integration due to the technological interrelatedness of production processes in the affiliated enterprises. Under these conditions, the khozraschet system worked within the context of individual enterprises, but could not be effectively assimilated as a management tool at the association level. As a result, the association was for the most part allowed to be relegated to the role of an intermediary between the ministries and subordinate enterprises. For this same reason most enterprises looked upon the association as an unnecessary administrative layer in the management process. For their part, the ministries regarded the associations as mere extensions of their own authority or as detached subordinate central agencies and this, in fact, is how they were used. Generally speaking, this meant that the association, as an integral element of the industrial sphere of the economy, and the status of its executive officers (the general director and his staff) as the highest level of management were actually only pro forma in nature.

This undesirable state of affairs, which existed in all the above countries, seriously hampered the implementation of measures aimed at making further refinements in the system of management. In order to correct this problem, action was taken that was basically geared toward making further improvements in the organization of the industrial and technological infrastructure. The sole intent of these remedial actions was to realize the original goal effectively, that is, to bring about a situation in which the integration form that was already in place at the highest level of the industrial sphere would constitute a large-scale organically homogeneous complex, whose management staff would function as the executive body of the actual integration process, and not as an essentially disorganized "agglomeration" of individual enterprises. All of the countries involved were, in principle, in agreement with this objective. Consequently, it was also apparent at the very outset that this requirement could only be fulfilled by an integrated

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organization that is structurally arranged as a khozraschet unit. In this regard, it was understood that the uniform management of all integrated components could be effectively exercised only within the framework of a single complex; a complex which would operate on the principles of khozraschet management as one unit.

Thus, even during the initial stages of this development, the awareness of the aforementioned fact caused some of these countries to embark upon programs aimed at transforming the existing associations into khozraschet-type entities (mainly in the GDR, Poland and Bulgaria). At the same time, it was stressed that these programs were an important precondition for the transition to subsequent phases of the process encompassing the reform of the management system (especially so in the GDR, where the gradual conversion of associations into khozraschet-type organizations is one of the key tenets of that country's economic reform).

Of course, the mere fact that a decision was made to reorganize individual associations along khozraschet lines did not alter the basic problem at hand, i.e., how to create, within the framework of the integration of enterprises, an authority that could effectively and efficiently exercise comprehensive management of the integration as a whole. In view of the conditions under which the associations were operating at that time it turned out that, in essence, this problem had to do with the dispute between the interests of the individual affiliated enterprises operating on a khozraschet basis (i.e., those enterprises which were relatively autonomous in the conduct of their business affairs) and the requirement which stipulated that the entire association should function as one khozraschet unit (i.e., under an authority fully empowered to manage the affairs of all the affiliated enterprises). Given the existing khozraschet status of the enterprises that made up these associations, it proved to be virtually impossible to implement effectively a uniform management of the organization as a whole. In this case about all that the management was able to do was to serve as an intermediary between the relevant branch ministry and the individual enterprises. This is also the reason why, in the course of trying to settle this conflict, an effort was made to look for another direction in which to proceed.

The most important lesson learned from this period was that the only way in which it would be possible to arrive at a partially effective solution to the key problem would be to look for new diverse forms of associations. This means that it was necessary to find a way in which it would be possible, in a number of cases, to resolve effectively (at once or gradually) the conflict between the integrated khozraschet units and the requirement that the integration as a whole should also function as one khozraschet unit.

Thus it was around 1968 that these countries decided to start the integration process with some differentiation in their structural makeup. This meant major intervention in the organizational structure of the production which, in some of these countries, resulted in reorganization of the entire production infrastructure of the industry (in Hungary, Romania and Bulgaria). At the same time, the development of democratic centralism in some of these countries also had an impact with varying degrees of intensity--on the process of setting up specific integration forms. By the same token, the new integration forms clearly reflected the conditions of the overall economic situation of each of these countries. These conditions included in particular the overall quality of management, the volume of

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industrial output (in aggregate terms and in the output of individual branches), and the prevailing level of concentration in the respective industry. It was the diverse conditions in each of the countries which imbued the overall concept and evaluation of the integration processes and specific integration forms with a clear and unique characteristic.² Notwithstanding these differences in each of these countries, it was confirmed that the pursuit of this policy has become an objective necessity and that this was precisely the direction in which their economies must move.

The individual countries approached the solution of the problem--expressed only in terms of principles and key steps--as follows:

On 1 January 1971, after several years of experimentation and evaluation of the usefulness of associations, a far-reaching program, aimed at the reorganization of the infrastructure of industrial production, was launched in Bulgaria.³ First, what were formerly 97 associations were consolidated into 64.⁴ As a result, their number was reduced by one-third and the average size of these associations increased substantially.⁵ This signified a dramatic increase in the degree of the centralization of industrial management (sometimes referred to in professional literature as administrative concentration). The vast majority of these associations represented the integration of production activities within the same sector or branch of the economy or among several allied sectors.⁶ In these cases, the criterion for advisability of integration was either the commonality of technological processes or the homogeneity of finished goods. These associations were thus based on the principle of horizontal production integration (the sectoral principle). Only a few associations were vertically integrated, i.e., geared toward combining production activities solely for more comprehensive utilization of raw materials.⁷ In addition to manufacturing, each association usually included research, planning, design, transportation, construction and foreign trade activities.⁸ The associations were organized from the former enterprises and plants, which became subdivisions and affiliates of the associations. The most important measure was that, effective 1 January 1971, all former enterprises that were merged into an association, had their status as a khozraschet unit gradually and deliberately diminished; they were now deprived of their separate identity as economic and legal entities and the association as a whole became a legal entity and a khozraschet unit.⁹ In this way the enterprises or large plants became affiliates¹⁰ and the smaller plants became subdivisions of the association and, for the most part, retained only operational independence in production--more autonomy in the affiliates, and less autonomy in the subdivisions. The association controlled the affiliates primarily by setting quotas and ceilings. In many cases it ran the subdivisions directly or regulated their activities by direct interventions. Specifically, the association was empowered to redistribute fixed assets and working capital among its affiliates and subdivisions; an authority which had previously been exercised by the relevant branch ministry. Pursuant to legislative acts passed during 1973 and 1974 Bulgaria has, at the present time, two basic forms of state economic organizations, i.e., state economic associations and state economic enterprises.¹¹ Affiliates are no longer a part of their organizational structure. The former enterprises that belong to these associations have now been transformed into subsidiaries possessing "relative degrees of autonomy."¹² In accordance with this system the associations are not managed by branch ministries, but rather by the Council of Ministers.¹³ Nevertheless, the respective ministries control the activities and performance of the associations under their

jurisdictions and are concerned with insuring the prospective development in their branches. Management within the associations is accomplished on the basis of the principle of collective leadership. The supreme managerial body is the management council, whose members are appointed by statute. The council is headed by a general manager of the association. For purposes of day-to-day operational controls, the management council appoints an executive committee from among its own members. In principle, these associations represent centrally managed production and economic complexes of the corporate type, or those operating under the combine principle, which is predicated on a two-tier system of management (the council of ministers and the association).

An important form of the state economic enterprise is the so-called "territorial combine,"¹⁴ which is a legal entity.¹⁵ In order to make them more responsible for the management of their own assets, production organizations (at the enterprise level) that have been incorporated into combines are also granted "a certain amount of leeway when it comes to acquiring rights and incurring obligations."¹⁶

The reorganization of the industrial and technological infrastructure in Bulgaria is characterized above all by its consistency and thoroughness, based on the effort at creating supraenterprise bodies as khozraschet-type entities with an exclusive relationship to the state budget and the central bank.

The industrial base infrastructure in Hungary also went through an extensive reorganization program.¹⁷ In contrast to the Bulgarian program, the Hungarian Program was marked by a major diversification of integration forms. The reorganization program got underway as early as 1 January 1968 when the former associations, which were the only kinds of integrated organizations in existence up to that time, were replaced by the newly constituted large-scale enterprises and trusts. At the same time, the association-type institution was also retained with a changed basis. In 1972 still another institutional form was introduced, namely, the so-called joint enterprise.

However, the large-scale enterprises were the predominant form of integration. These organizations were founded as a result of the merger of two to three enterprises engaged in similar production activities; enterprises, which normally used to belong to one and the same association. Thus, acting in conformity with the sectoral principle, industrial management units were set up, constituted as khozraschet-type entities and subjected to the direct control of the appropriate branch ministry (the two-tier system of management). The integrated enterprises became the plants and now conduct their business affairs in accordance with the rules of internal enterprise-khozraschet. In comparison with the former system, the creation of these large-scale enterprises was indicative of both the decentralization of production management and the achievement of a greater production concentration (due to the merger of enterprises engaged in similar production). In 1973 there were around 500 such large-scale enterprises in Hungary.¹⁸

Another integration institution took the form of trusts which, from the generally accepted standpoint, represent a unique feature in the organizational structure of Hungarian industry. The trusts were also formed through the merger of enterprises separated from associations. In most cases the number of enterprises that were incorporated into the same trust (approximately 10 or so) was much larger

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than the number of enterprises that formed the aforementioned large-scale enterprise. However, a characteristic feature of this arrangement was the fact that the enterprises incorporated into these trusts—from several different associations—were usually engaged in dissimilar production activities and in the manufacture of unrelated goods, based either on the nature of the raw materials which they processed or the type of finished product. Thus, in the course of establishing most of these trusts a purposeful attempt was made to apply the vertical integration combine principle.¹⁹ In addition, the trust comprised elements which engaged in preproduction activities (research, development, planning and design) and, wherever warranted, these trusts also comprised elements engaged in the production of goods for foreign customers and in some cases in the procurement of goods from abroad. This policy resulted in the creation of large-capacity industrial and commercial complexes with an effective application of the combine principle.

The status of enterprises integrated into trusts varies according to the conditions of the given case. The majority of enterprises within the trusts have retained the right to conduct their business affairs for the most part in accordance with the principle of enterprise *khozraschet*, i.e., with varying degrees of minor restrictions while the rest were given the status of plants. The latter were generally subject to direct management by the trust general directorate.

It follows that although the trust as a whole is an economic production unit, endowed with a wide range of discretionary powers (especially in the area of planning and financial and credit management) it is not a *khozraschet*-type entity. The organizations that make up the trust are able to exercise only some of the authority that is characteristic of enterprise *khozraschet* management (such as sole responsibility for the fund formation of the so-called production and monetary incentive funds). The main reason for this is the existence of the abovementioned plants subject to the direct control of the general directorate. True, the general directorate (itself a unit administered according to the internal enterprise *khozraschet* type management) does manage the subordinate enterprises by precepts common to a trust-type organization but, it does so primarily out of consideration for the need to insure the integrity and smooth running of the overall production process within the framework of the "combine" trust, and out of consideration for the need for long-term development of integrated production. This means that the bonds which tie the subsidiary enterprises to the trust are much stronger than in a traditional trust. In this way, the trusts that exist in Hungary resemble more closely a concern-type integration. As of 1974 there were 19 trusts in Hungary.

The new associations are fundamentally different from the former associations that existed in Hungary and from those that exist in the other socialist countries. They were constituted as an organization with the loosest integration ties. Their main function is to coordinate certain designated activities of the amalgamated subkhosraschet operating enterprises or large-scale enterprises (but also of the trusts). For this purpose these associations can be established in one of two ways, i.e., either in response to a directive issued by the appropriate branch ministry, or on the basis of a mutual agreement or contract entered into by the enterprises (and other industrial entities) concerned. In this latter case, the association fulfills only the tasks under the terms of the contract. Hungary is thus far unique among the socialist countries in employing this voluntary contractual approach to the formation of integrated organizations.²⁰ But since the

consent of the appropriate ministry is also required for associations founded on a contractual basis, this principle does not conflict with the planned centralized management of the socialist economy. In essence, this practice amounts to an initiative from "below" which is one of the manifestations of developing democratic centralism. As of 1 January 1968, a total of 14 associations had been established in Hungary, of which 11 were founded in response to directives issued by the appropriate branch ministries.²¹ By 1971 there were already a total of 25 such associations, 10 of which had been founded in response to ministerial directives.²² In light of what we have just said, it follows that the new associations established in Hungary cannot be regarded as economic production entities, but merely as ad-hoc, temporary groupings of certain industrial organizations established to carry out certain designated tasks, especially tasks involving the coordination of various activities. This practice is in line with the notion which holds that it is effectively impossible to take a group of industrial organizations, given the objective conditions which determine their status as discrete *khozraschet* units and transform them overnight into a combine that will also function as a single *khozraschet* unit.

A higher level of integration than the association is represented by the organization type known as the "joint enterprise," which has been operating in Hungary ever since 1972. It is based on a contractual principle [of voluntary association] with the possibility of time limits [on the duration of such joint ventures].²³ According to this principle, enterprises which are engaged in similar production activities and which function as *khozraschet* entities join together for the purpose of joint activities, which they would be unable to carry out individually due to their limited resources, and where it is also apparent that it would be more efficient to carry them out jointly. This is especially true in the case of scientific and technical research, joint investment projects, the joint organization of services and marketing. The affiliated enterprises participate in the integrated organizations in the form of varied size investments. Their accountability in the management corresponds to the size of their investment and they receive their share of the profits established by the contract under the terms of which the joint enterprise was founded. Their legal status remains essentially unchanged as a result of their having joined in this arrangement. Elements of a trust-type integration are in evidence in the association and especially in the joint-enterprise form of the integration.

The GDR and Poland took essentially the same approach to the resolution of this problem. These two countries did not undertake any sweeping programs to reorganize their industrial infrastructures. In their case, it was resolved that the basic thrust of the effort should be to establish and reinforce the unitary management system of the existing associations, especially so in terms of their overall development in conjunction with the effort to consolidate or, in some cases, to broaden the discretionary powers of associated enterprises with respect to insuring production efficiency. Most importantly, with a view to carrying out this policy, the imperative which called for the gradual systematic transformation of the existing associations into *khozraschet* entities fully endowed with plant, equipment and personnel to provide for the efficient development of all aspects of the production process, including the preproduction phases, was reaffirmed. (In the GDR this imperative was already incorporated in the basic principles governing the reform of the system of management). It is obvious that the [fulfillment of this policy] is predicated on the long-term developments.

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Ever since the start of the 1970's, both countries have been focusing their attention on the quest for elements [of economic management] which would contribute to the solution of this problem. If, on the one hand, the associations are to represent the national interests vis-a-vis the interests of the enterprises and, on the other hand, to advance the reasonable demands of the enterprises vis-a-vis the interests of central authorities, it is a complex and difficult task. There is no need to emphasize the fact that in relation to enterprises this dilemma poses some sensitive problems. It is especially true that any statutory reinforcement or broadening of the rights of an association as a whole might signify, all other things being equal, a corresponding limitation on the discretionary authority of the enterprises. At the same time, the question arises as to whether, in a given concrete situation, such a restriction might not lead to a reduction in the efficiency of the subordinate enterprises which could, in turn, be reflected in the overall performance of an association. Even though the pursuit of this policy line was generally necessary under the given conditions, if the stated objective is to be realized with at least some degree of relative efficiency,²⁴ one should not underestimate the consequences of the fact that this policy is at variance with the perceived interests of most enterprise managers. This sensitive problem area has a bearing on associations engaged in the production of identical or similar product lines, as relatively autonomous economic entities.²⁵ However, this issue is of no concern to the integration type, represented by associations of plants which are likewise constituted in accordance with the sectoral principle and which also exist in the GDR and Poland. Associations of this type operate as integral khozraschet units and represent sectoral enterprises of the highest degree of integration among the affected plants.²⁶ This arrangement is also a function of the general two-tier system of management (consisting of ministries and sectoral enterprises).

Both of these forms of associations are, in each case, constituted on the basis of decisions arrived at by central management agencies. Both countries stress the need for a well thought out and substantiated, centrally planned formation of these associations and other forms of integration. However, the GDR makes an allowance for the creation of common interest associations of industrial trade entities interested in setting up joint marketing programs on the basis of voluntary contractual principle. Industrial entities operating under a different type of integration can also take part in this sort of arrangement.²⁷

It follows that this pattern of integration does not show any signs of being a part of the trend toward the establishment of uniform industrial complexes.²⁸

In the GDR and Poland a dramatic step in the development of integration forms was represented by the decision to employ vertical integration of production, that is, to pursue the policy of joint production in the centrally planned formation of industrial combines. These combines were established by merging appropriate enterprises belonging to an association, enterprises which lost their status as independent enterprises and, as a result of their having been incorporated into a combine, acquired a status as plants. It was stipulated that such combines should be set up in those cases where for reasons of efficiency it was deemed necessary to organize the production of certain kinds of goods, designated by the central authorities as primary and advanced (in keeping with the principle of selective development) and conducive to economic growth, into a single, centrally managed industrial organization. In both countries the decision to take this approach was

made as far back as 1968.²⁹ The GDR took the lead in launching programs aimed at the realization of this policy (in the wake of pilot projects that had been under way ever since 1967). After extensive preparations, Poland also established its first combines on 1 January 1970 (13 combines were set up in the engineering industry and two were set up in the chemical industry).

In connection with the principal policy thrusts of the campaign geared toward the diversification of industrial integration forms, it is fitting that we should examine the performance record of these combines primarily from the standpoint of the above principles, that is, with a view of using the concentration for amalgamation of production, even though the general interpretation of the purpose of these combines in the GDR and Poland is considerably broader than the concept of traditional combines. While in the traditional combine the organic joining of diverse but related production, that is, the application of the vertical [integration] principle, is deemed to be of critical importance,³⁰ in the GDR and Poland this policy was regarded as being only one of several optional key principles underlying the concept of newly created combines in those countries.

The general rationale of these combines rested on the principle of concentration and amalgamation of industrial and financial assets and cadres so as to ensure the most effective implementation of technological progress. Thus, in combines of this type, a higher priority is given to management functions (which means that they are expected to contribute to improving the overall management system) as opposed to merely a certain way of organizing their production. Conversely, it can be said that the specific method by which the production is organized, especially in case of vertical integration, may represent a sound realistic basis for improving enterprise as well as central management (from the standpoint of industry as a whole, especially when it comes to more effective streamlining of management relations in the area of planning), even though management problems within a combine are more complex and place greater demands on management personnel than is the case in a single-sector enterprise. That is to say, the vertical integration of production creates its own prerequisites for the most effective concentration of sufficient resources and energies. To be sure, it cannot be said that this principle applies in any and all situations. It does not apply in those cases where an analysis indicates that, for a given period of time, a simple interenterprise cooperation may be more effective.

However, it is encouraging to note that, because of their broad concept, the new combines which have been established in the GDR and in Poland carry within them a tendency toward vertically integrated production processes. This is being borne out both by the implementation of the official principles which govern the establishment of combines and by the way in which the combines of both countries actually operate.³¹ A typical application of the principle of vertical integration, for example, is the new shipbuilding combine in Rostock in the GDR. This combine encompasses not only the shipyards, but also a plant that builds shipyard facilities, plants for manufacture of electrical ship installations, a plant that produces marine paints, and so on.

In both countries these combines were essentially accorded the legal status of an enterprise and have been operating in accordance with the principles of enterprise *khozraschet*. Consequently, it was only in exceptional cases that the units which make up these combines were accorded the status of legal entities (these cases involved certain geographically remote research and development organizations).

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These units were usually plants which did not have any legal or trade autonomy in commercial relations with other organizations. However, these plants did have their own management, their own production councils, and their own resources, and they operated in accordance with the principles of intraenterprise khozraschet. They set up their own operating funds and used them under the combine management supervision.

These combines, acting as joint production management units and having the legal status of an enterprise, either had an independent directorate or else this function was performed by the management of one of the combine's enterprises (i.e., the key plant of the combine in terms of integrated output; usually the plant making the finished products within the combine). This depended on whether the combine was managed directly by a ministry, or whether it was incorporated into an association.

The combines under ministerial control had their own management, while those combines which belonged to an association were managed by one of their member plants. The reason for this was that the establishment of a separate management staff in a combine belonging to an association would have been tantamount to introducing an additional management echelon. It was originally expected that the combines would have essentially the status of associations and only in exceptional cases would they be established within the [existing] framework of associations.³² This plan was later revised and combines were being established both within the framework of associations and under the direct ministerial control. But it turned out that the combines established within associations were a structurally foreign element. This incompatibility was reflected both in the dissimilarity of the combined production from the overall character of an association's production processes and in the complexity of the management (in comparison with an association's other affiliated enterprises the combines have a broader range of discretionary authority). Even though these combines did not have their own management which functioned independently of the association's other plants, in fact an additional echelon came into being at their level of management. That is why subsequent developments in this area conformed to the original intention, i.e., most of these combines were transferred from associations to direct subordination under a ministry. But in this connection, both countries are still faced with the problem of providing the combine with a research and development base. As long as a combine was a member of an association, it was dependent on the association for such services. But when a combine is subject to a ministry, it does not have--given the generally applied principle of self-financing--adequate resources to build its own R&D base.

Major changes also took place in terms of the internal relations in the combines. This was especially true in the GDR where, pursuant to a pertinent directive dating from 1973, combines normally consist of combine enterprises and only rarely of plants.³³ Just like the combines, the combine enterprises are regarded as legal entities.³³ This applies mainly to "combines with predominantly decentralized organization" (e.g., the Schwedt Petrochemical Combine, the Schwarza Synthetic Fibers Combine and metallurgical combines) and to some extent also to "combines with mixed organizational structures" (e.g., the Buna, Carl-Zeiss-Jena and Schwarze Pumpe combines), but not to "combines with predominantly centralized organization."³⁴

Generally speaking, the combines in the GDR and Poland have been positively evaluated and, in view of GDR economists, their principal virtues lie in the fact that "they are able to organize large-scale production runs, make extensive use of mechanization and automation, concentrate resources and skilled manpower in connection with the manufacture of important product lines, shorten lines of communication in intersectoral cooperation, and improve working conditions."³⁵ In Poland a few of the not very traditional, large-scale combines built up over a long period of time, have been left essentially intact (e.g., the Lenin Metallurgical Works in Krakow and the Mazow PETROCHEMA Refining and Petrochemical Plants in Plock). In view of their large size, these combines are organized more as concern types.

The development of integration forms in Romania got under way on a significant scale roughly around 1969. Up until that time, the question of the organization of the industrial base was not considered within the context of a reform process of improving the system of management. It was only on the basis of the experience gained by the other socialist countries in this area that a decision was made by the Council of Ministers, based on a resolution adopted by a plenary session of the Central Committee of the Romanian Communist Party in December 1969, to abolish the central administrations of the ministries and to embark upon the extensive reorganization of the country's industrial base. Up to that point there had been no intermediate link between the enterprise sphere and the central authorities. There are two facts which are most characteristic of this reorganization campaign; although, Law No 11 of 1971 on the Organization and Management of State Socialist Industries also applies. First, the enterprise continues to be the basic unit of industrial organization (especially in contrast to the situation in Bulgaria where the enterprise is a subordinate unit of the association). Second, this reorganization effort is based on the establishment of large-scale industrial units within the framework of diverse integration forms, forms which were erected for the most part on the basis of the principle calling for taking advantage of concentrated production, both horizontal and vertical, with a view to the eventual transformation of these institutions into organizations responsible for all aspects of the management of integrated production. While on the subject of these enterprises, it should be added that their total number was considerably reduced as a result of this reorganization program (the integration process converted many of them into plants). On the other hand, the spectrum of their rights and functions was expanded, especially so in the area of small-scale capital investment and in the area of supplier-consumer relations (supply and marketing functions were decentralized and delegated to the enterprises; something, which, in turn, made it possible for enterprises to enter into direct commercial contacts with each other).³⁷ The enterprises carry out most of their functions on the basis of and within the constraints of the provisions of the national economic plan.

In the course of setting up these large-scale economic units the following principles were observed; specifically: merger of enterprises which manufacture identical or related products employing the same production technologies; the integration of enterprises in the same sector or branch which work together (e.g., engineering enterprises which are manufacturing complete capital installations on a subcontracting basis); and the integration of enterprises in differing sectors and branches whose products are tied together in production of a specific finished good. The observance of these principles was complemented and supported by the criterion of effective exploitation of the territorial principle. The practical

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application of these principles resulted in the establishment of four kinds of integration forms, referred to in legal terms as centrals (i.e., the equivalent of our own VNJ's, organized as units for ensuring [the functioning] of the pre-production stages, among other things), with a legal entity status, representing the basic organizational structure in the Romanian industry.

In keeping with the above law these [forms] are:

- the industrial central,
- the combine,
- the industrial group (a group of factories or plants),
- and the trust.³⁸

The industrial central is an amalgamation of similar enterprises, operating exclusively on the basis of enterprise khozraschet [cost accounting systems], or plants.³⁹ There is no change in the status of enterprises when they are incorporated into centrals, unless they have already been changed into plants employing internal-enterprise khozraschet with a direct subordination to the central. Thus far the central performs essentially the functions that were done in the past by the central administrations (this applies in particular to decision-making on enterprise investments and the area of enterprise planning). In Romania, this form, which is similar to the trust-type, is regarded as a transitional phase to a higher form of integration which would function as an integrated khozraschet unit, while all of its subordinate integrated units would manage on the principle of internal-enterprise khozraschet. But this is a long-range goal and conditions must be created for the gradual realization of this goal.

On the practical level, the Romanian combine is fostering tendencies which favor the integration of production units encompassing all phases of the production process from the receipt of raw materials (this does not include the mining of coal and ores, which is concentrated mainly in the trusts) to the production of finished goods.⁴⁰ By becoming members of a combine, most enterprises generally lose their individual khozraschet standing and become plants (factories) with an internal-enterprise khozraschet. The combine as a unit tends to become a single khozraschet unit. Its management apparatus has assumed responsibility for and exercises a large number of specialized functions, including nearly all functions in the areas of investment, exports, and supply and marketing. The plants (or factories) are thus able to concentrate better on production.

The industrial group (a group of factories or plants) has the character of a sectoral (or branch) enterprise. It consists of one large enterprise and several smaller ones with similar production. After integration into industrial groups, all of these enterprises lost their individual khozraschet standing. Only the industrial group as a whole becomes a khozraschet unit. Industrial groups are founded in order to insure the production of complete lines of machinery (machinery, equipment and spare parts).⁴¹ Consequently, the industrial group, in addition to the trusts, is a typical feature of the Romanian engineering industry. The industrial group engages in a wide range of subcontracting ventures with enterprises in other branches of the economy. In some situations an experiment

is being conducted within the framework of these industrial groups, an experiment which is based on the fact that a particular organizational unit, because of the uniqueness of its product and remoteness from the group's management center, is accorded the right to conduct its business affairs in accordance with the principles of enterprise khozraschet. Such an organizational unit is accorded the legal status of enterprise. In these cases the industrial group assumes the character of manager of the sectoral enterprise with its affiliated plants.

In Romania, trusts are especially prevalent in the mining industry (coal, ores), the metallurgical industry, the power industry (in addition to industrial centrals) and in the engineering industry (in addition to industrial groups). They represent a departure from the conventional concept of the trust in that they encompass both enterprises as well as plants that are directly controlled by the trust management. This means that, within the framework of the trust system, some units operate on the principle of enterprise khozraschet, while others operate according to intraenterprise khozraschet. In most cases, the criterion used is the extent and complexity of operations and the unit's location relative to the trust administrative headquarters.

The above facts reflect some of the important characteristics of the integration processes in Romania. During a short time Romania has achieved a major and substantive differentiation of its integration forms. A significant range of variations exists in the status of units within the same integration (i.e., from the standpoint of operating on enterprise or intraenterprise khozraschet). Finally, a third characteristic feature is the flexibility of operations of individual integrated forms in practice (no particular form is used exclusively for a particular branch of industry; that is, two different forms may be used within the same branch). By the same token, the combine is by far the most common form (out of the 187 industrial integration forms that existed in 1972, 112 were combines).⁴²

During the period under review, that is, starting around the year 1968, the USSR did not embark upon any major reorganization of its industrial infrastructure. This is because, during the preceding years, conditions conducive to the further development of the existing organizational structure of social production in the USSR had been created. This process was a reflection of the fact that, in line with the development of the production forces and needs of the Soviet economy, and in conformity with the conditions which then existed, a planned course of concentrating the production along both horizontal and vertical lines was pursued. As a result, the USSR was able to establish both production associations⁴³ organized along sectoral or branch lines and vertically integrated production combines. Both of these forms were created primarily as a result of the integration of enterprises which, by their incorporation into an association or combine, lost their status as enterprises and were changed into plants. The production associations and combines were thus constituted as large-scale enterprises.⁴⁴ Up until 1974 they were governed by the rules pertaining to socialist state industrial enterprises. Since 1974, these institutions have been governed by the Law on Production Associations (and the Law on Combines) which were ratified by a resolution of the Council of Ministers on 27 March 1974. Generally speaking, no fundamental changes in the process were necessary. Only further improvement in the continuing planned process was required. This issue, among others, was taken up by the 24th CPSU Congress. In the reports to the congress by L. I. Brezhnev

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and A. N. Kosygin, the role and significance of these large-scale economic production complexes—the associations and combines—were duly underscored and, at the same time, policies calling for the making of further improvements in this area were spelled out. Most importantly, the requirement for continued systematic concentration of production,⁴⁵ expansion of the combine form, and for the establishment of scientific production associations was announced.⁴⁶ In the USSR, these tasks were being gradually implemented, as is borne out particularly in the resolution of the USSR Council of Ministers "On Certain Measures Aimed at the Further Improvement of Industrial Management (No 140, dated 2 March 1973⁴⁷), in the "General Statutes for All-Union and Republic Associations,"⁴⁸ ratified by the same resolution, and by the aforementioned 1974 Law on Production Associations. This means that in recent years the USSR has made a commitment to the establishment of all-Union and republic industrial associations, which of course are not interchangeable with production associations. The industrial associations are being set up either at the level of the Soviet Union as a whole, or at the level of individual republics, in terms of a single or several interrelated branches, as large-scale, full-fledged and unitary economic production complexes operating on the khozraschet basis. In most cases these associations are made up of appropriate production associations, combines and organizations engaged in preproduction activities (scientific research institutions, design and building organizations). The industrial association management becomes a level of comprehensive management in these production associations and combines (or other enterprises).

In light of the preceding comments, it follows that, in connection with the objective process of creation of supraenterprise entities, the European socialist countries, in response to decisions made by their respective central authorities, and regardless of the local terminology that is used, are establishing two main integration forms, namely, the trust-type, which includes some concern-type management elements, and the sectoral enterprise-type form—both of which make effective use of the combine principle.

Supraenterprise entities, endowed with their own research, development and other departments, acting as vital contributors to the preproduction phases of industrial endeavor, are making it possible to overcome the barriers dividing branches and ministerial jurisdictions, barriers which hinder cooperation among enterprises of different branches that have a share in the production of finished goods. Moreover, these barriers, by perpetuating the enormous number of diverse enterprise-to-enterprise ties of cooperation, make it impossible for the central management staff to plan effectively and manage production on a nationwide scale.

By the same token, this analysis illustrates the striking trend of gradual integration of functions, which is vital to truly uniform and effective management of the integrations as one complex, under the [central] management of these integrations. All in all, this concentration of functions and gradual improvement of its implementation reflects, in its totality, a process of actual increase in the role of the supraenterprise organizations; a process which, in turn, is an integral part of the reinforcement of the overall axis of direct management of the national economy.

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FOOTNOTES

1. This phase got under way as far back as the end of the 1950's in connection with the general requirement for greater efficiency in the socialist economy, based, in particular, on growth intensification and improvement of management effectiveness deriving from the resolutions of the 20th CPSU Congress (1956) and accepted in all socialist countries. It was at this point that the individual countries started work on the improvement of their respective systems of national management of the economy and it was in direct relation with these efforts that most of these countries, acting roughly at the same time, launched far-reaching programs of reorganization of their industrial infrastructures. The individual countries proceeded to abolish the central administration by the ministries and to set up associations gradually, not all at once to meet a deadline as was the case in Czechoslovakia as of 1 April 1958. The key principle governing the establishment of these associations was the sectoral or branch principle.

The decision to create these associations in the individual countries was made by the highest-level management and each individual association was generally formed in response to a decision of the appropriate branch ministry. Enterprises concerned by these mergers were not required to state their position. Also, a more thorough analysis of the current industrial base organization was not made beforehand, nor even were any rough estimates made as to what the reorganized infrastructure was expected to contribute. The founding of the associations as large-scale complexes was, above all, intended to create one of the important prerequisites for the transition to introduction of new principles into the system of management. Moreover, the usefulness of the decision to establish these associations was predicated on taking advantage of greater concentration of production for further specialization and cooperation in production operations. This is also the reason why basic research played no role in the reorganization of the industrial infrastructure in any of these countries, nor did any theoreticians participate in its implementation. During this phase, the reorganization of the industrial base was, both with respect to the definition of the policy goal calling for the establishment of associations on the basis of the sectoral or branch principle and with respect to the way in which this policy was carried out, strictly a product of the central political and governmental agencies of the countries concerned. Also during this phase, the associations of enterprises or plants established by directive and, essentially, horizontally integrated, were the only forms of integration in the countries in question. In essence, these associations were constituted in a three-tiered system of management consisting of ministry--association--enterprises.

2. In this connection it is appropriate to point out that certain economists in the individual socialist countries voiced opposing views concerning the purpose of integration of production into large-scale, complex organizations in their relation to the economic reform process. For example: "Together with the significance of economics in management, a larger role is also being played by the association, which is actually becoming the 'central figure' of our management structure. To an ever greater extent, the proper functioning of the associations is becoming a factor in the success of all reforms realized since the Fifth Congress of the PZPR." (ZYCIE GOSPODARCZE, No 22, 1970); "The

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system of management which has been evolving during the course of Hungary's economic reform program and the enterprise structure currently being created are not fully compatible. Specifically, in some areas, this organization is hampering the development of the market mechanism" (HIZ, No 12, 1971) (These quotes were selected from the following study: Jaura, Z. "On Certain Trends Accompanying the Establishment of Industrial Associations in the European Socialist Countries and in the USSR," a research paper prepared for the Economics Institute of the Slovak Academy of Sciences, 1972).

3. In keeping with a September 1969 resolution adopted by a plenary session of the Central Committee of the Bulgarian Communist Party and the new statutes for state economic associations ratified in 1970.
4. See the above quoted study by R. N. Yevstigneyev, p 44.
5. There were now an average of 27 subdivisions, in place of the former 18 per association; the total number of employees increased from an average of 10,000 to 17,000, and the total value of fixed assets increased from an average of 140 million leva to 230 million leva. Op cit.
6. Dimov, A. "Bulgaria--the Associations Take Over the Enterprise Functions," HOSPODARSKE NOVINY, No 32, 1971.
7. "Industrial Organization Forms in Bulgaria," MODERNI RIZENI No 11, 1970--CTK--Institut Rizeni.
8. Op. cit. Atanas Dimov.
9. Plandorova, H. and Knez, K. "The Organizational Structure of Bulgarian Industry," HOSPODARSKE NOVINY, No 7, 1973.
10. An affiliate can also be a combine; see: N. M. Druzyakova, "Bulgarian Associations," EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA, No 1, 1971.
11. F. Pavelka, "Financial Management and Wage Incentives in the State Industrial Organizations of the Bulgarian People's Republic--Current Status and Prospects," FINANCE A UVER, No 2, 1976.
12. "Kritika burzoasnich a revizionistickych koncepci statu a prava" [A Critique of Bourgeois and Revisionist Concepts of State and Law], Academia, Prague, 1975, p 73.
13. See above quoted source: H. Plandorova and K. Knez, "The Organizational Structure of Bulgarian Industry."
14. Z. Provaznik, "Production Efficiency and Quality Come First," RUDE PRAVO, 24 August 1976.
15. "Kritika burzoasnich a revisionistickych koncepci statu a prava," p 73.
16. Op cit, p 73.

17. But this reorganization was not directly related to the economic reform program.
18. In these cases the term large-scale enterprise should be interpreted very broadly, i.e., in relation to the physical size of Hungarian industry in comparison with the industrially advanced countries.
19. For example, the "Hungarian Aluminum Industry Trust" encompasses all phases of the aluminum production, beginning with mining of bauxite and ending with the production of finished aluminum products destined for industrial consumption, mainly including cables with aluminum conductors, flat wire, sheet metal and panels.
20. Insofar as we ignore the allowances that are made in the GDR for the voluntary association of economic entities for the purpose of carrying out joint marketing ventures; see below p 27.
21. Deryabina, M. A., "The Performance Record of the Associations in the European Socialist Countries," EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA, No 2, 1970.
22. Op cit. Z. Jaura.
23. See above quoted work by R. N. Yevstignejev, pp 45 and 46.
24. Along these lines an experiment was conducted in Poland involving the right of the association to redistribute the fixed assets and working capital of its subordinate enterprises. For example, the general director of the Nitrogen Industry Association was allowed to "make changes in the course of the year, within the framework of directive indicators, constraints and financial standards of the association in accordance with discretionary principles and methods" (SDP Principles, paragraph 9, item 3). In the GDR, on the other hand, this redistributive authority was withheld from all of the associations and was transferred, in conjunction with the reestablishment of branch ministries, to these same ministries. (See the above quoted work by R. N. Yevstignejev, p 48).
25. In Poland there are also some associations (dating from the period prior to 1968) which include unrelated enterprises with interlocking productions. Consequently, these associations are more like combines.
26. The difference between the sectoral enterprise in the GDR and Poland and the sectoral large-scale enterprise in Hungary is primarily the fact that in Hungary these enterprises are established on a nationwide scale, and usually encompass an entire sector or branch of the economy, while in the GDR or Poland they are established as regional entities. They are virtually indistinguishable in terms of the external or internal aspects of their management systems. The GDR also makes use of a mixed form of association, i.e., an association which includes enterprises and plants managed by a general directorate. In these cases, the association amounts to a sectoral enterprise made up of affiliated subordinate enterprises. These kinds of associations are also faced with much the same problems, though to a lesser extent, as associations of enterprises.

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27. See the above-quoted study by Z. Jaura.
28. Unlike the associations and joint enterprises in Hungary, which are also based on the contractual principle, but where these preconditions are potentially extant.
29. Pursuant to the Decree of the GDR Council of Ministers of 16 October 1968 and pursuant to the resolution of the 1968 Congress of the Polish United Workers Party, which was incorporated into Decree No 193/1969 of the Council of Ministers.
30. Even though the professional literature sometimes fails to link the vertical integration with the traditional petrochemical combines based on processing of the same material. The metallurgical combines are considered to be the archetypes of vertically integrated combines.
31. "In the GDR, for example, four types of combines have taken root:
 - combines with successive phases of raw and processed materials processing (e.g., a metallurgical combine processing iron ore into cast iron and producing steel, rolled products and wires);
 - combines engaged in both primary and auxiliary production (e.g., a metallurgical combine processing iron ore with a production of building materials from blast furnace slag, [i.e., cinder blocks]);
 - combines devoted to the comprehensive utilization of raw materials (e.g., a petrochemical combine);
 - combines made up of associated plants that specialize in the production of sets of equipment and production assemblies and components, but which function as suppliers to a central (assembly) plant (e.g., the combine that produces "Ruhla" watches). This is the most common type of combine in the GDR."

See the above quoted work by R. N. Yevstigneyev, pp 55 and 56.

In Poland, in conformity with the operating guidelines which are an appendix to the Council of Ministers Resolution No 193/1969, the term combine may be used to refer to:

- the combination of production of finished goods in the form of complete sets, components and semiprocessed materials,
- the combination of production of certain categories of goods designed for the same purpose,
- the combination of certain interlocking phases of a technological process involving the production of goods mandated by central authorities,
- the combination of production of various goods obtained from the comprehensive processing of the same type of raw material (or several types of raw materials),

--the combination of production of goods by several different branches, goods intended for a single purpose within the framework of an administratively territorial, smaller unit.

At the same time, technological, commercial, service and other types of institutions can also be merged into combines in both countries.

32. Under the terms of a decree adopted by the 1968 PZPR Congress.
33. Decree on the Tasks, Rights and Duties of National Enterprises, Combines and Associations of National Enterprises dated 28 March 1973.
34. H. Trauer, "Zur Organisation der Beziehungen zwischen dem Kombinat und seinen Betrieben" [The Organization of Relations Between the Combine and Its Plants], published by the Central Institute for the Study of Socialist Economic Management of the SED Central Committee, Berlin, July 1973, p 23.
35. See above quoted article by M. A. Deryabina.
36. Economics Institute of the Czechoslovak Academy of Sciences, UVI, INFORMACNI MATERIALY, No 11, 1973.
37. "The Organization and Management of Industry in the Romanian Socialist Republic," OTAZKY MIRU A SOCIALISMU, No 3, 1971.
38. See also "Changes in the Management Structure of Romanian Industry" (summary of article by N. Hanes published in PROBLEME EKONOMICE, No 2, 1970), HIZ, No 27, 1970.
39. Industrial centrals exist in the footwear, textile and ready-made apparel industries, but also in the power, prefabricated concrete components, and other industries.
40. In Romania combines are especially prevalent in the petrochemical industry, in logging and wood products industry, and in light manufacturing industries.
41. Especially in order to meet the needs of the engineering, metallurgical, petrochemicals and chemical industries, light industry, and the food processing industry.
42. See the above quoted work by R. N. Yevstigneyev, p 51.
43. Thus, for example, at the end of 1966 there were more than 1,200 production associations in the USSR.
44. This form of production association is very similar to our own sectoral enterprise. In addition to this "pure" type of production association, the USSR has also established, though on a smaller scale, "mixed-type" production associations, referring to those associations which comprise both enterprises and plants. In this case, the Soviet production association is similar to our sectoral enterprise which includes affiliated enterprises. However, the USSR does not intend to establish any more of these kinds of associations in the future.

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45. This has resulted in the abolition of more of the smaller associations in particular and in the establishment of large-scale associations; this in turn caused a reduction in the total number of associations. In 1972 there were more than 600 associations in the USSR.
46. These scientific production associations were established primarily in order to forge an organic and effective link between scientific research and production, a link which insures that newly developed technologies will go into full-scale production as quickly as possible. The performance record of these associations has been very encouraging. Compared to the situation which prevailed formerly, it now takes only about a third of the time to put certain kinds of new technologies into production.
47. HOSPODARSKE NOVINY, No 15, 1973.
48. Supplement to HOSPODARSKE NOVINY, No 17, 1973.
49. In trust-type integrations the general directorate is supposed to perform the essential, but rather problematical function of coordinating the activities of different branches. But the general directorate can also serve to get small, local enterprises involved in the fulfillment of the plan of technical development integration. This is an especially important function in the case of the GDR where, within the context of interbranch coordination, the appropriate enterprise integration (associations or combines) also takes advantage of private, seminationalized, municipal and national enterprises (belonging to other integration institutions). In some countries (e.g., in the GDR and in Bulgaria) so-called coordination contracts are concluded between individual integrated units for as long as the duration of the country's long-range economic plan while, at the same time, these contracts can also be concluded on a multilateral basis. Under the terms of these arrangements, participating integrated units can choose their own suppliers and enter into contractual agreements with them.

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NEW SOIL CULTIVATION TECHNOLOGY TO SAVE ENERGY

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[Article by Eng Z. Kuckal, CSc. and Eng M. Suskevic, CSc., Research Institute of Basic Agricultural Technology at Brusany near Brno]

[Text] The changed world energy supply situation is forcing all countries with advanced economies to reevaluate their development objectives for their national economies. Attention focuses on energy consumption, especially consumption of oil and its derivatives. The first symptoms indicative of the end of cheap energy in the world began appearing as early as in 1972, at which time our country introduced measures designed to control fuel and power consumption in the national economy. These measures dampened somewhat the preceding sharp rise in the introduction of energy-intensive technologies. In the Fifth Five-Year Plan our power consumption increased by barely half a percentage point for each 1 percent rise in national income, but this favorable trend was reversed in 1976 to 1978, causing a disparity between supply and demand.

In prevailing economic conditions increasing the supply of fuel and power has become progressively more expensive and difficult. The CSSR spends a third of its capital expenditures for industry on the development of its own power resources and, therefore, our effort must aim at conserving energy and achieving energy efficiency.

It has been demonstrated (both at home and abroad) that conserving energy is much cheaper than producing or importing it. Therefore, an effort must be made to conserve fuel and power, given our limited resources.

The Power Requirement of New Technologies

Focusing constantly on energy conservation is reflected in agriculture. New soil working technologies--reducing soil preparation to a minimum and planting untilled land--were formerly evaluated only in terms of savings achieved in the work time of tractors, labor and the reduction of expenditures, but a situation has arisen where new technologies are evaluated mainly in terms of fuel savings.

In the agricultural and ecological conditions prevailing in the CSSR, long-term practical experience has demonstrated the advantage of working soil by plowing, i.e., loosening it and turning it over followed by additional operations needed to sow or plant this or that specific crop. The primary objectives is bringing about a favorable physical condition of the soil, manage soil humidity properly, and create conditions favorable for biological action of the soil.

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At the same time plowing plays an important role in weed control.

In conditions prevailing in crop production, when the above soil preparation effects are being supplemented or even completely replaced by other measures (application of pesticides and high doses of chemical fertilizers), intensive cultivation (especially in the case of cereals) has lost its original importance.

The prerequisite for analyzing economic indicators is knowledge of the new technological procedures. Newly developed modern soil technologies meet the conditions of the overall developmental stage of means of production, the state of the art, and are suitable for grain production, primarily of cereals.

In raising tuberiferous crops no important changes will occur in the foreseeable future because here deep plowing is necessary to work manure deep enough into the soil, and is also required by subsequent tilling operations during the vegetative period.

In the production of cereals the key criterion for the introduction of new technologies is the suitable physical condition of soil. These new procedures, which are called minimalization, fall into two categories.

1. The minimum amount of soil preparation, including limited plowing depth, and amalgamation or even omission of individual tilling operations where the soil surface is being turned over, mixed and reduced.
2. Sowing untilled land where the crops are planted in untilled or only shallowly loosened soil without preceding plowing.

Minimum soil preparation can be applied in the case of cultivable soils, at most half rocky, not requiring constant or seasonal drainage, whose soil reaction and nutrient content have been adjusted so that they possess generally favorable agronomical characteristics.

Sowing untilled land places even greater demands on soil of medium to heavy granulation, without marked skeletal content, and at least 60 centimeters deep, where the characteristics of the specially constructed drilling machine present only a moderate danger of erosion.

The New Technologies in Practice

On the basis of the above requirements, and by using soil improvement materials, land areas were determined where rotation and tilling depth will permit minimum soil preparation. In the CSSR, ecological conditions permit minimum soil preparation on a land area of 3,132,000 hectares, i.e., on 64 percent of available tillable land (of this 2,152,000 hectares in the CSR and 980,000 hectares in the SSR). Within the limits of the above land areas, unworked or only shallowly loosened soil can be planted in the CSSR on a land area 2,432,000 hectares in size, i.e., on 50 percent of the available tillable land (on 1,603,000 hectares in the CSR and on 829,000 hectares in the SSR).

With the given crop structure, and using minimum soil preparation technologies to grow cereals under ecological conditions favorable for agriculture following on suitable preceding crops and the availability of an adequate number of special

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drilling machines type 20 SeX BJ 150, or equivalent mechanical means, minimum soil preparation in the CSSR can be practiced by 1990 on 717,000 hectares and sowing of unplowed land on 721,000 hectares of tillable land. The potential application of these technologies in the Seventh Five-Year Plan is evident from Table 1.

Table 1. Potential application of new technologies (in thousands of hectares)

Year	1981	1982	1983	1984	1985
Minimum soil preparation	500	550	600	650	700
Sowing untilled land	309	350	391	432	473

Table 2. Economic evaluation of new technological procedures

Parameter	Traditional agricultural technology	Minimum soil preparation	Sowing untilled land
Need for human labor hours per hectare	9.81	7.75	5.81
Need for tractor work hours per hectare	9.58	7.60	5.38
Expenditures Kcs per hectare	924	700	458
Fuel requirement liters per hectare	50.1	27.1	20

The areas where new sowing technologies can be applied are determined taking into account the current inventory of special drilling machines and their projected deliveries.

Economic Evaluation

The new technologies were monitored and evaluated economically under operational conditions. The listed data collected over the entire growth and harvest period are summarized in Table 2.

Table 2 reveals that by using minimum soil preparation the following savings are achieved compared with traditional technologies: in human labor, 2.06 hours per hectare; in tractor work time, 1.98 hours per hectare; in expenditures, Kcs 224 per hectare; and in fuels, 23 liters per hectare. Sowing of untilled land results in these savings: in human labor 4 hours per hectare, in tractor work time 4.20 hours per hectare, in expenditures Kcs 466 per hectare and in fuels 30.1 liters per hectare.

The full application of new soil preparation technologies and sowing of untilled land can yield in a target year a saving of 30 million liters diesel fuel or 34,800 tons of standard fuel i.e., 1,224,600 GJ. Of course, these direct savings can be achieved in the CSSR agricultural production only with a suitable structure of the necessary machine park, primarily of disc plows for soil preparation and special drilling machines. Additional fuel will be saved indirectly in the production of agricultural machines and equipment which will be the object of a future study.

With the annual consumption of 900,000 tons of diesel fuel, direct saving of fuel in agriculture amounts of 24,000 tons or 2.66 percent of overall consumption.

The problems connected with the consumption of fuels and the introduction of new technologies in the production of crops will continue to be the main concern in agricultural practice, of management organs and the research base. The solution these problems will have a considerable impact on our entire national economy.

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